

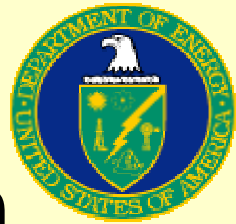
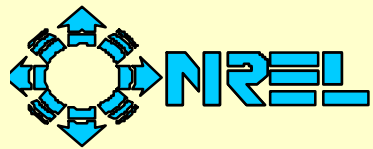
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# **Mid-Atlantic Regional Hydrogen Infrastructure Forum**

**Jim Ohi**

**National Renewable Energy Laboratory**

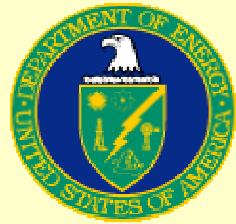
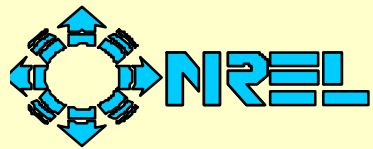
**DOE Regional Office  
Philadelphia, PA  
March 12, 2003**



# Goals and Objectives of Forum

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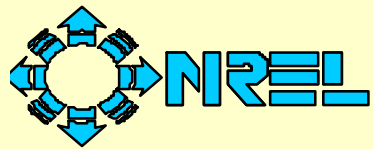
- Provide focus to coordinate hydrogen infrastructure planning and deployment in the Mid-Atlantic region
- Discuss infrastructure deployment options and opportunities, particularly for the near-term
- Share information and improve networks for collaboration and follow-up



# Key Assumptions

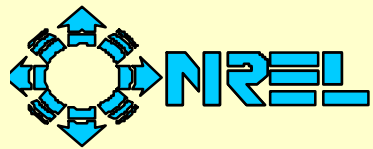
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- Near-term infrastructure will grow from existing hydrogen facilities
  - merchant, by-product, captive producers are key
- Local and regional initiatives needed to complement national vision and roadmap
- Regional hydrogen nodes will grow into national infrastructure over time
- Synchronization of investments by suppliers and users is critical issue
  - key governmental role is to facilitate first steps



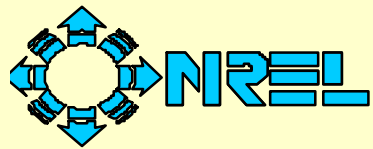
# Overall Approach

- Develop regional approach to infrastructure planning to complement DOE national hydrogen roadmap effort
  - two-pronged approach
    - institutional: link and collaborate with key stakeholders
    - analytical: develop data and tools to assess infrastructure options
- Contribute regional insights and opportunities to national hydrogen infrastructure blueprint
- One of series of infrastructure forums planned to gather information on regional perspectives, issues, and opportunities



# DOE/EERE Regional Offices

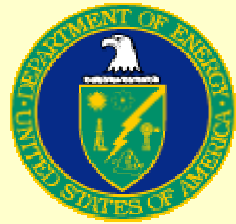
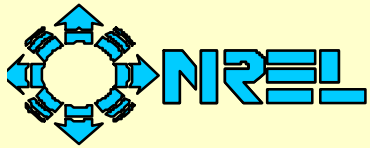




# Approach

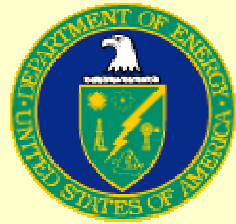
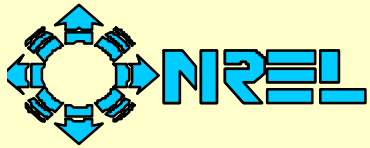
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- Conduct series of regional infrastructure forums
  - Denver (Rocky Mountain Hy), May 11, 2002
  - Chicago (GTI), October 9, 2002
  - Boston (MIT), October 10, 2002
  - Philadelphia (APCI), March 12, 2003
  - Orlando, (Atlanta RO, FSEC, NASA), April 29, 2003
  - Seattle (BPA), summer 2003
  - All forums hosted by DOE Regional Offices
  - Place regional perspectives in national context
- Develop regional infrastructure collaboratives based on national blueprint and regional opportunities and interests
- Develop detailed national data base and GIS analysis tool kit



# Progress

- First Regional Infrastructure Forum hosted by Houston Advanced Research Center, April 18, 2002
  - invited participants from energy companies, hydrogen producers, regional and state agencies, research institutes, federal agencies
    - potential collaborative project (propane-based hydrogen fueling infrastructure) with Texas DOT, Texas State Energy Office, Fuel Cells Texas, Texas Railroad Commission
- Rocky Mountain Hy (regional collaborative) formed
  - first meeting held on December 6, 2001
  - focus on R&D priorities, education, information outreach, legislative initiatives to accelerate hydrogen infrastructure
  - second meeting held May 11, 2002

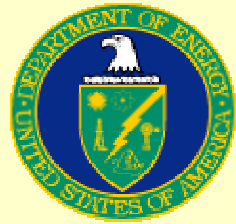
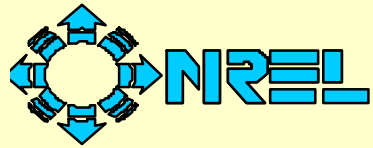


# Progress

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- Northeast Regional Forum, Boston, 10/9/02
  - formed Northeast Hydrogen Alliance to coordinate activities
  - first Steering committee meeting, February 28, 2003
  - several renewable hydrogen projects planned
- Midwest Regional Forum, Chicago, 10/10/02
  - focus on natural gas transition issues, state initiatives
    - Next Energy in Michigan
    - Ohio Fuel Cell initiative
- Southeast Regional Forum, Orlando, 4/29/03
  - leverage large NASA-FSEC project on hydrogen

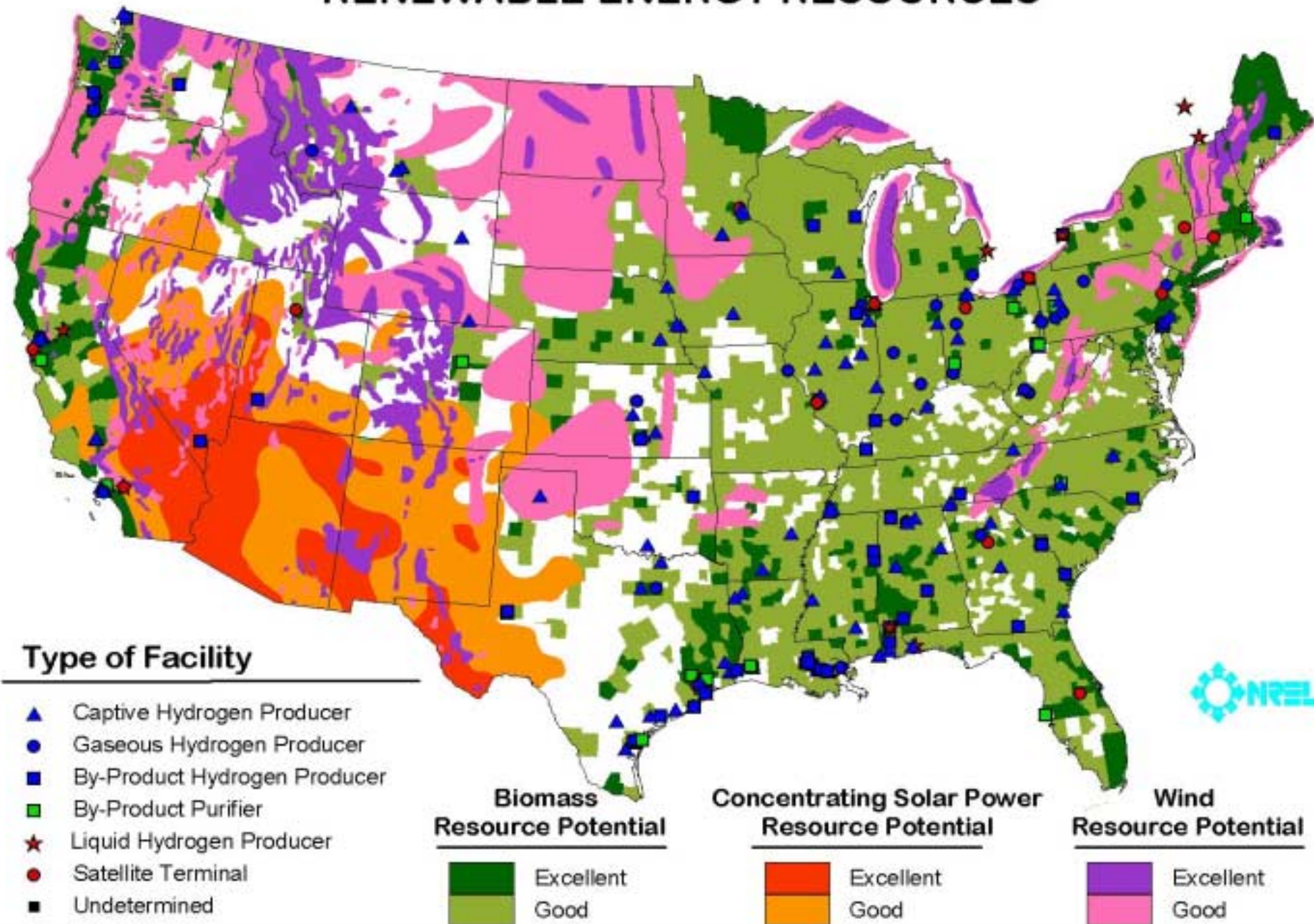




# Activities at NREL

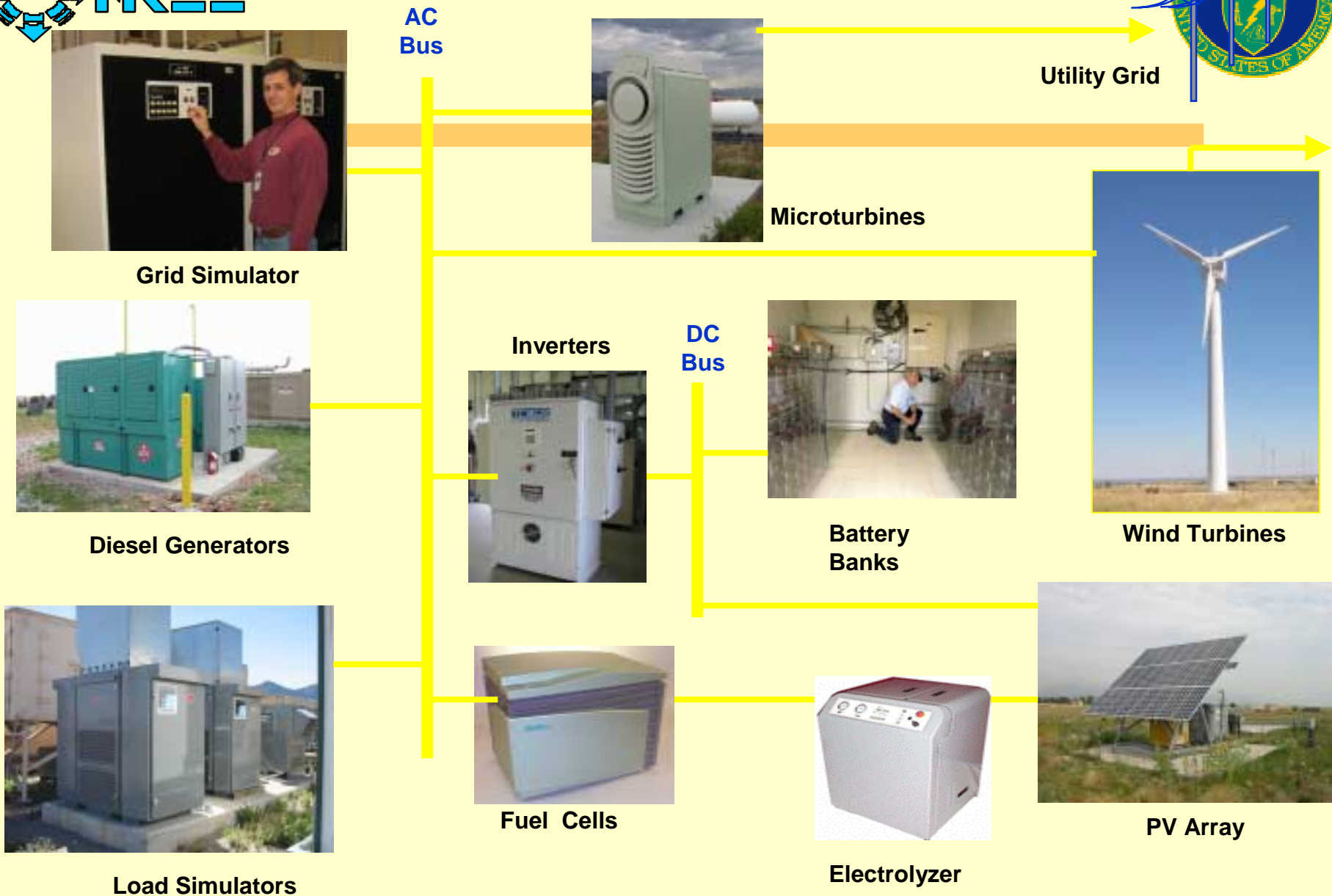
- Testing planned for renewable hydrogen production and storage in distributed energy generation system
  - state-of-art distributed energy test facility in place
  - collaborative testing project for PEM electrolyzer in place
  - test PEM fuel cells as part of distributed energy generation system
- Conceptual planning for “renewable power packages” (RP<sup>2</sup>) underway
  - modular renewable energy-hydrogen-fuel cell packages
    - optimized for load, resource availability, value

# HYDROGEN FACILITIES AND GOOD TO EXCELLENT RENEWABLE ENERGY RESOURCES





# Distributed Energy Resources Test Facility





# Conclusion

Advances in hydrogen fuel and fuel cell technologies along with changes in markets and policy are the driving forces that will shape the future of energy - a future that is likely to be more:



What can stakeholders in the Mid-Atlantic region do to accelerate a transition to this future?